DOCUMENT RESUME

ED 279 295 IR 012 531

AUTHOR Morris, Judith
TITLE An Introduction to Information Technology in Training and Education. Revised. Information Sheet No. 11.
INSTITUTION Council for Educational Technology, London (England).
PUB DATE Jul 86
NOTE 49p.
AVAILABLE FROM Council for Educational Technology, 3 Devonshire Street, London W1N 2BA, England.
PUB TYPE Information Analyses (070) -- Reports - Descriptive (141)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Communications; *Computer Uses in Education; Developed Nations; Foreign Countries; *Information Sources; *Information Technology; Interactive Video; Microcomputers; Organizations (Groups); *Technological Advancement; Teleconferencing; Training; Videotex
IDENTIFIERS United Kingdom

ABSTRACT

Intended for trainers who have little knowledge of information technology (IT) and its use in education and training, this information sheet describes IT as consisting of three elements--information handling, communications technology, and information transformation--and explains how these elements contribute to the conveying of information. To illustrate the growth of IT, examples are given of the enhancement of older methods of communication; e.g., the videocassette has become the interactive video system, and the telephone has been adapted for use in teleconferencing in distance education. Systems that are used to provide information directories, known as teletext and viewdata, are explained. A basic outline is provided of the various components of a computer system and how they are used to accomplish the following: order and store information for libraries (i.e., databases); send, store, and receive information (i.e., electronic mail); store and process information (i.e., word processing); and aid in the development of problem-solving and decision-making skills. The development of the microprocessor is defined in terms of input/output, hardware, and data, and how these components work together is described. A glossary of terms and an annotated guide to resources on IT conclude this report. Resources listed are divided into sources of advice, information, and training, which include organizations, projects, services, associations, information centers, and video programs; books, both on IT in general and on specific types of IT; and journals. (DJR)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED 279 295

CET

Information Sheet 11

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Council for Educational Technology

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

An introduction to Information Technology in training and education

Foreword

This information sheet is intended for the uninitiated trainer in both the education and training sectors - those with little or no knowledge of information technology. It consists of:

- a brief introduction to information technology - what it is, what it can do. This section aims to give the user a basic understanding of the fundamental terminology and concepts surrounding IT, (Page 2);
- a glossary of terms referred to in the text, (Page 11);
- a brief annotated guide to resources - other sources of advice, materials, books and journals, (Page 17).

Because there are now so many sources of information and training for IT, we have not wished to duplicate the efforts of others, particularly where we cannot cater for specialised interests. We therefore feel that the resources guide is in some ways the most important section of this introduction and hope that our readers will take advantage of the wide range of resources available to them.

IR012531

Council for
Educational Technology
for the United Kingdom
3 Devonshire Street
London W1N 2BA

☎ 01-580 7553/01-636 4186
Prestel ✱211#
Telecom Gold 81: CET 001

You may copy this Information Sheet if you wish without prior permission from CET

BEST COPY AVAILABLE

July 1986

An introduction to IT in Training and Education

1. Information Technology (IT)

Everyone's heard of it, but few know what it means and even the most reasonable shiver at the thought of actually using it. There are, of course, all kinds of definitions for IT, some of them quite incomprehensible and exacerbating the public's general feeling of confusion. A fairly straightforward definition produced by the Council for Educational Technology understands IT to consist of three main elements:

* Information Handling - the storage and retrieval of information

* Communications Technology - the transmission of information

* Information Transformation - the manipulation of information; putting it into a form in which it is usable for a particular purpose

Another similar definition, widely used and adequate for our purposes, suggests that IT involves the use of computers, microelectronics and telecommunications to help us produce, process, store, obtain and send information in the form of pictures, words or numbers, more reliably, quickly and economically.

2. The Elements of Communication

If we examine this definition we discover that it describes a new means for some very old activities, mostly surrounding the business of communication. Thousands of years ago we could only produce or obtain information from what we discovered in our immediate environment through direct experience or through a small network of people. We might send information by using a runner to cover long distances or by a smoke signal from a mountain top. Education meant learning skills directly from our elders. Only that information which was important for our survival did we select and store in our memories.

Today we produce and obtain information from a vast array of sources, many of them outside our immediate environment and beyond our direct experience, from books, journals, newspapers, from radio and television. We communicate via these media and, thanks to the postal service and the telephone, we have created a vast network of people with whom we can communicate. Because our world has so hugely expanded, because information comes from so many different sources, we have created new ways of conveying this information in education and training.

Most teachers and trainers, the information filters, are familiar with educational broadcasting via the television and radio. Chalkboards, wall charts, and audio-visual aids such as filmstrips, slides and overhead projectors have long been used to supplement the traditional teaching methods such as lectures. With the advent of the video cassette recorder, appropriate television programmes can be recorded for later use and video cassette programmes are now being made for all sectors of education and training.

3. The Old and the New

All of these methods and aids are a means of enhancing the learning experience, a means of communication, some of them very old, some of them quite new. Recent developments surrounding microelectronics, telecommunications and information technology in general, aim to accomplish the same things, but through an improvement on the older methods. The use of the video cassette programme is a good example of this principle, since, at least in some situations, it is an improvement on lectures or audio-visual aids such as wall charts.

Because it is not only visual, but animated, the video cassette programme is more likely to hold our attention and is better suited to demonstrate such things as processes. One drawback of such a system is that the learner is essentially passive. In order to involve the learner more we might like a system where the pictures on the screen could be stopped and where we could display on the screen any portion of the programme, in any order, for revision and consolidation purposes. It might also be useful to have text superimposed on the screen, to have a system which asks questions and which invites a response from the user. In fact, such systems do exist and are appropriately known as interactive video.

Other enhancements of the old technology surround the use of the telephone. Much information is gained and conveyed through this familiar medium, but it is limited by the fact that it takes place between two points only. In some cases it would be useful to be able to talk to three or more people in different places simultaneously. This applies particularly to distance education where students work at their own pace and at a convenient time and place, but where they operate under a certain isolation from fellow students and tutors. Many organisations are multi-sited, making training difficult, since colleagues and trainers are spread out at different locations often over long distances. A conferencing system which brought people together using the telephone might be one very good way of tackling these difficulties. Such systems, commonly known as audio or teleconferencing, do exist and are currently being used in education and training.

4. Electronic Information

Most of us use directories of various kinds to obtain information. The people who provide this information, or the information providers, come from many organisations; publishers, commercial, educational and other agencies. It is often difficult to track down all the various directories produced by these agencies and it might be much simpler and speedier if we could obtain the information we needed from sitting down in front of our television and pressing a button. The systems for doing just that are known as videotex.

When the information is obtained through a broadcasting organisation and is broadcast through the air along with the television signal, it is called teletext. BBC's teletext system is known as Ceefax and ITV's as Oracle. When information is transmitted to the television screen using a telephone line the system is called viewdata. One such system is British Telecom's Prestel. The information obtained using the viewdata system comes, not from a single organisation, but directly from many organisations like those mentioned above.

The main difference between teletext and viewdata is that in the latter system you can not only get information out, but you can also respond to the information provided. So, for instance, you can retrieve information about airline timetables and respond by booking a seat on a plane. Because the user can respond to the information provided, viewdata systems such as Prestel are frequently called interactive.

5. Information Storage

Needless to say, the evolution of these new means of obtaining information has meant the proliferation of information itself. On a day to day basis there is more and more information with which we have to cope. We have created countless ways of storing and ordering all the information we cannot hold in our own memories. Telephone directories are familiar stores of information as are our personal address books. The information within these stores has been arranged alphabetically so that we can get the information out again.

Libraries are also stores of information and librarians have created systems of information retrieval in the form of such things as card catalogues. Another store of information familiar to most of us is the office file. Here, like the library, the information is often ordered into subject categories according to the needs of the office. The storage and ordering of large amounts of information is a tedious business, but it happens to be something that the

computer does extremely well. When you use a computer to order and store information in the way that a library does, for instance, you are creating a database.

6. The Multi-Purpose Machine

Thus we can see that many of the old technologies used for communicating, sending and ordering information, have been enhanced by the advent of new information technology and this includes the use of the computer in a variety of ways. The computer is only a fast working, rule following, multi-purpose, idiot machine used to process information in one way or another. It is just this fact, however, that makes much of the new technology possible. So, for instance, when the user gives the computer the instruction or information it needs, the computer can in turn instruct the interactive video player (mentioned above) when and where to stop. When the user wants to respond to, or where the user requires feedback relating to the information provided in the program, this can also be accomplished through the computer.

Other examples surround videotex. Both teletext and viewdata exploit the microcomputer's capacity to receive and store information transmitted by broadcast signals or telephone lines. The computer can thus act both as a postman and a postbox. The computer receives the letters written by the sender, it sorts the letters out and sends them down the line, it stores the letters in its own mailbox until the receiver is ready to pick them up. It is not surprising that systems such as this are often called electronic mail.

The use of a computer can also relieve us of some of those onerous tasks which take up time that could be more constructively used. How much time is wasted re-typing letters or papers simply because a sentence or paragraph needs an improvement in phrasing? Word processing allows us to edit our work, to re-arrange sentences or words and to insert new ideas, without having to re-type the entire text. All this can be done relatively painlessly using a microcomputer. All of this makes basic communication of information a much simpler task.

7. IT and Learning

Information technology, and in particular microcomputer technology, can never replace actual experience, can never replace the instructor or teacher. What it can do, however, is to bring direct experience one step closer to us, perhaps with a versatility not possible using the older media. A text book on biology can be used only for biology; a computer can be used not only in biology lessons, but in a maths lesson or a training session on procedures.

One author has called the computer the electronic book, but the comparison does not do the machine justice and is not really fair to the book. A book cannot simulate the experience of a process; a manufacturing process or the process of photosynthesis, for instance. Furthermore, there are many situations in education and training where actual demonstrations of such processes would be too time consuming, expensive or even dangerous to undertake in the classroom.

Similarly, the opportunities for exploration and discovery are limited. The book does not usually allow students to create their own models of real life situations, to ask 'what if?' kind of questions and it does not provide instant feedback to those questions. The computer, however, in educational and training situations can accomplish these things and because it can, it is much more able to help in the development of problem solving skills, decision making skills, understanding and creative thinking. Even a basic understanding of the computer as a logical machine can engender some of these qualities. The computer will not operate properly unless we give it a set of instructions in a logical sequence. We ourselves are therefore forced to impose some order on our fuzzy thinking and the way we go about doing things.

What's more, computers never get tired or impatient. If, for instance, you are using the computer to learn basic psycho-motor skills, such as keyboard skills, only you and the micro need know if you have hit the wrong letter.

Few reasonable people would say that the computer or indeed IT as a whole, is a panacea for all our educational and training problems. But it is hoped that some of the positive uses of information technology, in all its forms, have been hinted at in this brief overview. Information technology used with care and imagination, can we hope, offer us endless possibilities.

8. A Computer System

Earlier we defined a computer as a fast working, rule following, multi-purpose idiot machine used to process information in one way or another. We have already outlined some of its uses in education and training. Aside from these the computer has many other uses. The development of the microprocessor at the heart of the computer means that we can control equipment and electrical systems such as washing machines and light switches. Using a computer we can plot out a flight path or maintain an accounts system, we can produce graphs and charts which rise and fall depending on the information we give the computer.

Computers can't work by themselves. They must be part of a system characterised by interaction between the parts of the system and the user of that system. Without the 'human element' the computer is just another bit of idle machinery.

9. An Interactive Process

Imagine, for instance, the interaction between architect and builder. The architect designs the building. Once the design is settled the architect prepares working drawings together with a specification, precise instructions and any other information which the builder might need. In computer jargon the architect's communication with the builder might be called input. The builder assimilates the architect's input (instructions and information), processes this information and then gets down to work. The result, or output, is the finished building. A computer system works in much the same way, but does not have the eyes and ears of the builder, needed to take in the information. Information and instructions in a computer system are commonly input via a keyboard often very much like those used in typewriters. The end product or output is via a screen, often a television screen, or a printer. In a computer system all these bits of equipment are known as hardware.

Very often the information which is input into the computer is called data. Data is not really the same as information. Pragmatically speaking, information is something that is useful. Raw data, however, is useless unless we can manipulate it according to a particular purpose. The cement mixer makes a good analogy. If a builder wants a substance to bind bricks together, the raw materials (data) of sand, water and dry cement are not going to be of much use on their own. If, however, these are put into a mixer and bound together (processed), the end product or output will be a substance, namely cement, which is clearly much more useful to a builder than the raw ingredients.

10. How it happens

In order to work on all this raw data, however, the computer, like the builder, needs a 'specification', a precise series of instructions in order to proceed. This series of instructions is known as a program and, in more general terms, programs are commonly known as software. Just as a good builder is often a 'jack of all trades', so too is a computer - its versatility depends on the instructions you give it. Unlike the builder, however, the computer is very simple-minded and needs exact instructions for even the most basic of tasks. The computer possesses no inherent creative ability, no discretionary judgement, but, if we provide it with the right instructions, it will carry out any task we set it, no matter how ludicrous.

To some extent, the builder, like the computer, operates according to rule. He will know, for instance, that, in erecting a house, first the foundations are laid, then the framework is built, followed by putting up and enclosing the walls. The window and door frames are fixed in position and finally the roof structure is erected. This basic knowledge is also, in a broad sense, part of the builder's essential operating system. Once incorporated into the builder's memory, it will be permanently etched there; when our builder shuts down and goes to sleep at night this information will not be forgotten, any more than knowing how to walk will be forgotten. Unless there is a screw loose somewhere this memory cannot be altered; the builder will not attempt to erect the roof before the foundations. In a computer system this kind of permanent memory which cannot be altered or lost when the computer is turned off is called Read Only Memory or ROM.

Ramdom Access Memory or RAM is the computer's working memory. It is in this memory that we store the instructions and necessary data to perform a specific task - an applications program, such as those we might use to maintain our accounts. We can change these programs and when the computer is switched off programs stored in this memory will be lost. Random Access Memory can be likened to a builder's notepad. On this the builder might want to jot down instructions to a helper who is not really sure of the processes involved in plastering. These instructions can be altered according to the needs of the helper and when they are no longer appropriate, can be totally discarded.

On the other hand, the builder may want to create a file to store and save instructions and information for future use. In a computer system this is called a backing store. Programs are usually stored on a floppy disk, or on a hard disk built into the computer.

11. The Convergence of Technologies

The very basic outline offered above should give you some idea of how the various components of a computer system work, but information technology is about much more than computers. Information technology is about the convergence of technologies, namely computers and all those technologies surrounding telecommunications. Essential to these technologies is their capacity for enhancing communication, for presenting information in a variety of ways.

Electronic mail, the delivery of information via computer and telephone lines (mentioned above) is just one way of using the computer for communication. We can also share ideas via computer conferences which, like audio

conferences, allow participants to bridge distances and exchange information. Resources and information can be used more effectively when we link computers together to form networks. Computer programs stored in large databases can be transmitted from one computer to another via broadcast radio, television, or telephone lines. This method of transmitting or downloading of computer programs, commonly known as telesoftware, is clearly a more convenient way to distribute and share such programs.

Finally, new developments in satellite communications will mean that in the very near future we will be able to send not only television signals, but computer data, facsimiles of printed information and telephone conversations via satellite. With the advent of cable television not only will we be able to receive many more television channels, but two-way communication between viewer and television will also become a real possibility.

Information technology has arrived and is rapidly transforming society as we have known it. Whatever form education takes, whether we are teachers or trainers, we bear a responsibility to pass on those skills surrounding information technology which will be a necessary pre-requisite for full participation in this new society.

Glossary

Acoustic Coupler
A device into which the telephone receiver is placed so as to connect the microcomputer with the telephone line.

Analogue/digital
Analogue is a representation of information which is continuously variable. The continuous sweep of a clock is the analogue to the movement of time, just as the mercury in the thermometer is the analogue of temperature. The opposite of analogue is digital which represents information in a series of discrete units. The smoke signal which represents information in a series of discrete puffs is digital. Most computers work in much the same way and have to convert all information into a digital form in order to process it.

Applications Program
The necessary data and the precise series of instructions (a program) which enable the computer to perform a specific task.

Audio Teleconferencing
A system which allows three or more people at various locations to communicate with each other simultaneously using the telephone network.

Backing Store
A means of saving or storing information or computer programs which is external to the computer. In an office system the filing cabinet would be the backing store. The backing store of a microcomputer system can be either a cassette tape, floppy disc, hard disc or a ROM chip. A floppy disc can hold much more than a cassette tape but is much more expensive at the outset because it requires a disc drive. Unlike a cassette tape, however, information can be retrieved from the disc in any order in much the same way as we can play any song on a record depending on where we place the needle. Disc based systems are also much faster than cassette based systems. Hard discs work in much the same way, but hold more information.

Computer Aided Instruction (CAI)
See Computer Assisted Learning

Computer Assisted Learning (CAL)
The use of the computer in education; for example, using the computer, either to transmit and test the assimilation of

basic skills or facts or to model or simulate real events, procedures or physical systems. Other related terms which come under the umbrella of CAL are Computer Based Learning or Computer Assisted Instruction, but there is no consensus as to their individual meaning. The main distinction is between computer assisted learning and computer managed learning.

Computer Assisted Training (CAT)
The use of the computer in training; for example, using the computer to transmit and test the assimilation of basic skills and/or facts or to model or simulate real events, procedures or physical systems.

Computer Based Learning (CBL)
See Computer Assisted Learning.

Computer Based Training (CBT)
A generic term encompassing both computer assisted training and computer managed training.

Computer Conferences
A system which allows three or more computer users to communicate with each other using their computer terminals. A central computer acts as the post person sending messages from participant to participant. (See Electronic Mail).

Computer Managed Learning (CML)
The administrative use of the computer to organise the educational or training process, e.g. using the computer to compile and store student records, to generate, to administer, mark and analyse student tests for diagnostic or assessment purposes.

Data
What the computer works on or manipulates - information in its raw state which is practically speaking useless until it is put into a form which is meaningful or which serves a specified purpose. So, for example, 13484 means nothing until it is translated into a meaningful form, e.g. Friday, 13 April, 1984.

Database
A large organised collection of information held on a computer. Card catalogues in libraries or office files can also be considered to be databases. An office filing system might consist of a number of records on individual customers, for instance, and each of these records might be organised according to name, address and amount due. Information held on databases can be stored, organised or retrieved using computers ranging from mainframe to micro.

Disc
See backing store

Electronic Mail

The computer as post person and post box, e.g. the computer receives a letter or message from any registered user, stores them in its own memory under the name of the addressee for whom the message is intended and then sends that message down the line when the addressee is ready to receive it. Most electronic mail systems also provide the facilities for sending letters to a large number of addresses, the ability to copy letters to other addresses and the provision for the automatic handling of replies.

Floppy Disc

See backing store.

Hard Disc

See backing store.

Hardware

General term for all the physical bits of equipment that make up a computer system, including the peripherals such as disc drives, printers.

Information Technology

Involves the use of computers, microelectronics and telecommunications to help us produce, store, obtain and send information in the form of pictures, words or numbers, more reliably, quickly and economically.

Input/Output

What goes into the computer, e.g. instructions or data and what comes out, e.g. some sort of useful or meaningful information. Input devices include the microcomputer keyboard, light pens or graphics tablets. Output, usually in the form of text or graphics, can be displayed either on a printer or on a screen.

Interactive Video

A system which offers a learning programme which can present any portion of that programme in any order depending on the needs of the learner. The basic hardware requirements include a television monitor, a video replay system, and a means of controlling what that system presents:

- a keypad
- or a typewriter-like keyboard
- or a computer
- or a touch sensitive screen

Such systems present questions, invite responses and, depending on those responses, make the appropriate remedial loops which the learner needs in order to assimilate the learning material. Programmes are stored either on videotapes or videodiscs. More sophisticated or flexible systems combine the computer's versatility with the video to produce text and graphics on the screen, to monitor the users' performance and to guide the users through sometimes quite complicated series of options.

Modem
: A device used for connecting the computer to the telephone network. The connection is of higher quality than that provided by an acoustic coupler, but the need for a special socket makes the placing of modems inflexible.

Network
: Linking of a number of computers together in order to share information or equipment such as printers or disc drives.

Program
: A precise series of instructions which tells the computer what to do.

Random Access Memory (RAM)
: The computer's working memory. It is in this memory that we store the instructions and necessary data to perform a specific task, e.g. an applications program.

Read Only Memory (ROM)
: The permanent memory of the computer which cannot be altered or lost when the computer is switched off. The operating system, for instance, which controls the running of applications programs and the operation of various input/output devices, is stored in ROM.

Software
: The general term for computer programs.

Telesoftware
: The transmission of computer programs from one computer to another either by broadcast radio, television or telephone lines. Broadcast telesoftware uses BBC's CEEFAX's Teletext service or any compatible teletext system. Telephone based telesoftware can be used on any viewdata system, the most well known of these being Prestel (see Videotex).

Teletext
: A videotex system in which information is transmitted through the air along with the television signal. It is necessary to have a teletext decoder so that the television set can translate the incoming data and present it as a comprehensible picture on the screen. A teletext set already has an in-built decoder, but ordinary sets combined with a microcomputer and a compatible teletext decoder can also be used. CEEFAX and ORACLE are two such systems. (See Videotex).

Videotex
: The general term for systems which transmit information from a main computer and display it on an adapted television set or computer screen. (See Teletext, Viewdata).

Viewdata

A two-way (interactive) videotex system whereby information provided by many organisations and dispersed from computer centres is transmitted to a screen using the public telephone network. One such system is Prestel. You can receive Prestel on ordinary television with a special adaptor and keypad. However, in order to use the full interactive facilities of Prestel you need:

- a microcomputer
- a means of connecting the microcomputer to the telephone line which can be either a compatible modem, acoustic coupler or an adaptor capable of being connected directly into the micro
- and in most cases an extra jack socket

(See Videotex).

Wordprocessing

A means of editing text, i.e. re-arranging words or sentences using either a machine dedicated to wordprocessing or a microcomputer fitted with a wordprocessing chip.

A brief annotated Guide to Resources in Information Technology

The aim of this directory is not to act as a comprehensive guide to all possible sources of information, but to take the user one step beyond what has been offered in the introduction and to steer the uninitiated towards those sources which initially might be most helpful. The list of books and journals, therefore, has been selected with the complete or near novice in mind. Although a number of publications are aimed primarily at the education sector, there is much in these that those in the training sector would find informative and useful.

For those in the public education sector, the first course of action should be to contact the local education authority. Each LEA has a specialist computer adviser, who knows of work going on in the area, and who can recommend training and hardware.

For all those outside the public education sector information is dispersed among several different kinds of sources. These range from national organisations and local education authorities to professional bodies and unions. A glance at the appropriate directory gives a good indication of how varied the provision is - some organisations are not only sources of advice, but are also course providers or produce self-teach training materials. Many organisations run courses on a commercial basis.

People, of course, are always a good source of help, and before making any decision which you may regret later, it is always a good idea to talk with someone who has "been through it all before". If, for instance, you can talk to someone who has done a particular course, by all means do; you may learn that the course that looks wonderful on paper was a total waste of time, or on the other hand it may be just the course you want. The use of personal contacts and informal networks has proved to be a vital element in the learning strategy for most of us getting to grips with IT.

KEY:

Information/Advice = 0
Materials/Packages = *
Courses = @

Sources of advice, information and training

* Acorn Computer Education in Schools (CES)

Acorn CES
Technopark
645 Newmarket Road
Cambridge CB5 8PD
Tel: 0223 214411
(For enquiries, other than orders, relating to CES and its activities, and for software)

Acorn CES
c/o Vector Marketing Ltd
Denington Estate
Wellingborough
Northampshire NN8 2RL
(Orders for CES materials apart from software and inspection copies)

CES produces a wide range of resources including software, books and supporting materials for primary and secondary education involving the use of computers across the curriculum as well as providing assistance with in-service training courses. Recently it has developed an information technology awareness course for lower secondary students entitled, Living with Computers. Upon completion of the course students should be aware of: the nature of data, information and communication, the uses of computers in a variety of situations, the capabilities and limitations of computers, the ways in which computers are controlled and the potential impact of computers in society. The first part of the course called 'Computers, Information and You' is currently available and consists of pupils' book, supporting software, teachers' notes and software activity sheets.

(Software packs for 'Computers, Information and You' are available on LEA licence or institutional licence basis. Contact Gill Blackwell at CES Cambridge - see above address).

0 British Association for Commercial and Industrial Education (BACIE)

16 Park Crescent
London W1N $AP
Tel: 01-636 5351

A membership organisation, BACIE maintains an information service and has produced a useful resource guide on Computer Based Training, covering books, reports, journals, training and consultancy services and suppliers of software packages. BACIE will also provide a limited referral service for those who are not members. Details of the Resource Guide series and other services are available to subscribers on request.

0* BBC Computer Literacy Project

Broadcasting Support Services
P O Box 7
London W3 6XJ
Tel: 01-992 5522

BBC Enterprises Ltd
BBC Film & Video Hire Library
Guild Sound and Vision Ltd
6 Royce Road
Peterborough PE1 5YB
Tel: 0733 315315

BBC Enterprises Ltd
Education & Training Sales
Room E154
Woodlands
80 Wood Lane
London W12 0TT
Tel: 01-743 5588

Continuing Education Information
BBC, London W5 2PA
Tel: 01-991 8031

One of the largest educational broadcasting initiatives undertaken by BBC Education, this project consists of several series of broadcasts beginning in 1982 and planned through to 1986. The project includes a wide range of support materials including kits, filmstrips, books, a linked microcomputer system complete with user guide and optional expansions, software and associated courses in BASIC programming provided by the National Extension College. Broadcast programmes of particular interest are:

BBC Computer Literacy Packs

The Computer Programme - Ten video programmes, 25 mins each. Computer basics for beginners.

Making the Most of the Micro - Ten video programmes, 25 mins each. Microcomputers in action.

The Electronic Office - Six video programmes, 25 mins each. Information technology in the office.

Computers in Control - Five video programmes, 25 mins each. Introduction to robotics.

Four major series from BBC Television's computer literacy project, aimed at a wide range of viewers from schools and colleges to business and industry. Available from BBC Enterprises, 80 Wood Lane, London W12 0TT Tel: 01-743 5588.

Most BBC programmes are available for hire or purchase. Brochures listing all titles available for hire or purchase may be obtained from the Education and Training Division of BBC Enterprises. Alternatively contact the BBC Film and Video Hire Library for further information (see above address).

The latest contribution to the Computer Literacy Project is the live weekly series Micro Live, broadcast in Autumn 1986 and Spring 1987.

For further information on the Computer Literacy Project, contact Broadcasting Support Services at the above address. Broadcasting

Support Services also maintain a computer referral service offering information on computer courses, computer clubs, user groups and sources of advice for business and in-service training.

The BBC also publishes educational software to support both the Computer Literacy Project and the use of computers in schools. A catalogue is available from BBC Publications, 35 Marylebone High Street, London W1M 4AA.

Among other publications the BBC have also produced a useful newspaper Computerfax: A Guide to BBC and Open University Resources in Computing 1985-6. Update to be available late 1986. An occasional publication, it provides information about computer-related broadcasts for schools, adult education and the Open University, as well as information about books, software and materials for hire.

0* British Universities Film and Video Council (BUFVC)

55 Greek Street
London W1V 5IR
Tel: 01-734 3687/3688

The Council maintains an index of educational films, videos, audiotapes and slide sets which is constantly updated. It includes over 500 programmes on various aspects of computing, available from a variety of sources. Topics include the application of computers across a wide subject range, microelectronics and management education among others. Computer programs are also listed. The BUFVC Catalogue is published annually in microfiche, and the Council also maintains an on-line database - HELPIS - and provides an Information Service which will answer individual written or telephone enquiries.

0* Business and Technician Education Council (BTEC)

Diane Garrard
Central House
Upper Woburn Place
London WC1
Tel: 01-388 3288

BTEC was formed by a merger of the Business Education Council and the Technician Education Council in January 1983. Its members are a partnership between industry and education. A validating body, BTEC offers awards which cover pre-vocational, vocational, higher vocational and continuing/post-experience education.

The BTEC provision in computing and information technology is wide. At the post-experience level course guidelines have been developed in the form of units covering areas from data processing, word processing, computer studies and information

technology. For those with no previous knowledge the Computer Studies unit is intended to provide students from all backgrounds with knowledge and practical experience of the use of computer systems. For those with some background in computer systems the Information Technology for Managers unit is intended for managers or specialists seeking a more comprehensive understanding of the impact of information technology in their business operation or specialisation. BTEC has recently completed a Manpower Services Commission Open Tech programme to develop new ways of teaching technicians and supervisors about the applications of new technologies in business. For further details about this development contact Henry Goodman at the above address.

The guidelines outlining these units are available from the above address.

0@ Centre for Staff Development in Higher Education

Contact: Nick Rushby
2 Taviton Street
London WC1H 0BT
Tel: 01-380 0599

The Centre offers supporting services for new technologies in education and training, ranging from the provision of training in the skills and techniques of computer based training, artificial intelligence in training and interactive video, through the development of materials, to short and long term consultancy.

***@** City and Guilds of London Institute

(Peter Neate or Keith Brooker)
46 Britannia Street
London WC1X 9RG
Tel: 01-278 2468

The City and Guilds of London Institute offers a wide range of qualifications related to Information Technology. Besides offering courses in computer programming and information processing, City and Guilds has developed a new modular scheme - Information Technology 726.

A number of individual modules have been published covering:

1) Electronics and hardware
2) Computer programming and software
3) Computer applications and related studies, such as wordprocessing and database methods.

0* Council for Educational Technology (CET)

3 Devonshire Street
London W1N 2BA
Tel: 01-636 4186

CET's role is to advise education and training on the advantages and disadvantages of introducing new technologies. It is undertaking trials to both explore what the technology has to offer and to assess its potential to meet specific needs. It is taking an active interest in new developments in order to ensure that the interests of the educational user are upheld. It recognises equally the needs of the user for advice and guidance on the successful integration of the technology into existing teaching methods and on the opportunities it provides for new ways of learning.

This information sheet is one of the outcomes of its work on training in information technology. Other information sheets are available on teleconferencing and videotex, and there is a range of USPECs - User Specifications on the selection of educational equipment, and of books on learning and education technology. The current work of CET is described in CET News, available free from CET.

0*@ Educational Foundation for Visual Aids (EFVA)

National Audio Visual Aids Library
The George Building
Normal College
Bangor
Gwynedd LL57 2PZ
Tel: 0248 355155

A nationwide service of 14 National Audio Visual Aids Centres throughout the country, EFVA aids to produce, distribute and promote the use of visual aids. Services include:

- National Audio Visual Aids Library of over 6000 films
- the sale and servicing of equipment including microcomputers
- the sale and hire of software
- advice, guidance, consultation
- courses
- production services for the making of film, video and tape slide programs

0*@ Engineering Industry Training Board (EITB)

41 Clarendon Road
Watford
Herts WD1 1HS
Tel: 0923 44322

The EITB runs courses for trainers at its residential centre Webton Court, in Leeds, covering microcomputing for beginners, BASIC dialect programming and CBT. The Board has produced a computer literacy package aimed at first year or YTS trainees, consisting of four units covering an introduction to computers, information technology, programming and microelectronics. The package uses software for the BBC micro and includes tutors' guidance notes to help the trainer with little or no experience of the topics. Details available from Aubrey Chappell at the above address.

O*@ Further Education Unit (FEU)

(Chairman J G Owen, Chief Officer J W Mansell)
Elizabeth House
York Road
London SE1 7PH
Tel: 01-934 9411

This is an independent body funded by DES to promote, encourage and develop official provision of FE in the UK. Established in 1977 it has funded many research projects on IT in further education. Details of project reports, policy statements and occasional papers published by FEU or FEU/Longman are available from the Information Centre at the above address.

The Unit also manages the Regional Development Agents of the DES, PICKUP (Post experience updating in the professions, commerce and industry) programme.

O*@ Industrial Society

Information Technology Unit
Peter Runge House
3 Carlton House Terrace
London SW1 5DG
Tel: 01-839 4300

The Society is a self-financing advisory and training body of over 16,000 member organisations ranging from those in commercial companies, trade unions, nationalised industry to central and local government and employer associations. The Society's work is basically practical, offering audiovisual training programmes, conferences, workshops, in-company advisory and training services, information and personnel advisory services as well as a wide range of short courses. Of those courses surrounding microcomputers and information technology three might be particularly useful:

- An Introduction to Computer Based Training, intended for complete beginners, aims to offer an introduction to computer technology, an overview of different computer based training systems available and the basic principles of computer based training.

- Supervising People on VDUs is intended for office supervisors and experienced wordprocessing supervisors who are, or expect to be, in charge of departments using computer-based information technology.

- Micros for Managers is for anyone wishing to learn, through practical hands-on experience, about microcomputers.

0@ Information Technology Centres (ITECs)

Industry/Education Unit
Department of Trade and Industry
Ashdown House
123 Victoria Street
London SW1
Tel: 01-212 3388

Initiated by the government and with some funding from the MSC and the DTI, ITEC's aim to provide unemployed school leavers with training and experience in the area of new technology. The training includes an introduction to such areas as computer programs, teletext editing, wordprocessing and electronics. The centres also aim to involve local enterprise in developing and producing marketable products arising from the applications of the new technology.

Although initially intended for the young unemployed, some ITECs offer open access allowing local groups and individuals to use their facilities.

Contact the above address for the location of your nearest ITEC.

0* Information Technology Project

Trisha Strong
Project Director
33 Cavendish Road
London SW12 0BH

Addison-Wesley Publishing Ltd
Finchampstead Road
Wokingham RG11 2NZ

The Information Technology Project, developed by the Croydon IT Unit is intended to provide schools with all the materials needed to teach a course in Information Technology to pupils aged 9-14 years. Although the course is aimed at boys and girls equally, the emphasis has been to ensure that the girls are motivated and that the syllabus appeals to them. Sections of the pack include: introducing information, information skills, storing information, representing information, the IT family and applications of IT.

The project is published by Addison-Wesley (see above address) in two stages, the first in early 1985 and the second in Autumn 1986. Each stage will consist of 6 pupils' books, each on a particular aspect of IT, one teacher's guide, and support software on cassette or disc for the BBC Model B and Research Machines 380Z/Link-480Z micros. Additional copies of the pupils' books will be available separately in packs of five.

0 Library Technology Centre (formerly the Information Technology Centre)
Polytechnic of Central London
309 Regent Street
London W1R 8AL
Tel: 01-580 4562

The Centre opened in November 1982, and is now sponsored by the British Library's Research and Development Department until May 1987. The Centre aims to increase awareness of the uses of information technology amongst librarians and information workers. The emphasis is on the demonstration of microcomputers and software for information retrieval applications, library housekeeping, communications to remote files and downloading data. Suppliers and funding permitting, it is hoped that the software and systems on show will be more dynamic, reflecting the demands of a comprehensive demonstration programme and of the ever changing market place.

A current list of the systems in the centre is available from the Information Officer. Demonstrations are arranged by appointment.

0*@ Local Authorities Management Services and Computer Committee (LAMSAC)

Information Technology Management Awareness Programme
Rod Palmer
Vincent House
Vincent Square
London SW1P 2NB
Tel: 01-828 2333

The Local Government Operational Research Unit has produced a package of materials aimed at senior management, but which can be used by staff at all levels. The materials consist of written documentation and applications demonstrations, run on a BBC Model B with a disc interface and at least a single 100k disc drive. The purpose of the pack is to improve knowledge and understanding of and confidence with information technology and computers through the use of the technology itself. The pack can be used at home, on college courses or in office-based training. LAMSAC also runs several short courses ranging from microcomputer appreciation to workshops on information storage and retrieval.

LAMSAC has also produced a range of training software for microcomputers, using the computer to train in use of the most common software packages such as dBASE II and III.

0* Local Government Training Board (LGTB)

Eric Barty
Arndale House
The Arndale Centre
Luton LU1 2TS
Tel: 0582 451166

The Local Government Training Board has produced a range of publications including:

Information Technology - Identifying Training Needs
Managing On-Line (Issues for Consideration by Chief) Executives and Chief Officers)
Working with Computers - A Users Introductory Guide

Planned publications include:

The Councillor and Information Technology

Computer Based Training packages under production include:

Software Selection Strategy
This is CBT (An Introduction to Computer Based Training)

These products will be designed to run on the BBC microcomputer with floppy disk drive (40 or 80 track) and the IBM Personal Computer or compatibles.

A newsletter 'Training for Information Technology' is produced. Back issues are available while stocks last.

Details of publications and materials, or issues of IT newsletters, are available from Denise Wray (Extension 288). Other queries via Eric Barty (Extension 254).

PRESTEL *211461`
TELECOM GOLD LMX025

O*@ Microelectronics Education Support Unit (MESU)

Director: John Foster
Advanced Technology Building
Science Park
University of Warwick
Coventry CV4 7EZ
Telephone (0203) 416994

This is the successor to the Microelectronics Education Programme (MEP) in England, Wales and Northern Ireland. It is funded at £3 million a year, and planned to run for 5 years from 1986. MESU will provide support to LEAs and teacher training institutions in the development and integration of the new technologies in schools. It will provide a central information source, and a service for training and trainers. It will also commission the development of curriculum materials and continue work in Special Education through the network of Special Education Microelectronics Resource Centres (SEMERCs - for information on these contact Mary Hope at CET).

0* Micros and Primary Education (MAPE)

MAPE Administration
Mrs G E Jones
76 Sudbrooke Holme Drive
Sudbrooke
Lincoln LN2 2SF
Tel: 0522 754408

MAPE is a national organisation which aims to promote and develop the awareness and effective use of microelectronics as an integral part of the philosophy and practice of primary education. It offers advice and support to its members through a network of regional representatives and produces a house journal, MICRO-SCOPE, three times a year. A number of special reports are also published, covering areas such as LOGO and Information Retrieval. MAPE also produce the MAPE Tapes, cassettes of software, distributed free to members.

0*@ Microcomputer Users in Education (MUSE)

PO Box 43
Houghton on the Hill
Leicestershire LE7 9GX
Tel: 0533 433 839

MUSE exists to help both teachers and parents make effective use of small computer systems in the promotion of learning. MUSE has an extensive range of educational software suitable for home as well as school use. MUSE also publishes four editions of Computers in Schools and two special "Reports" annually, free to members. A three day summer course is run every year. Annual subscription is £13.50 by standing order or £15.00 otherwise.

0*@ Microsystems Centres

NCC Microsystems Centre
11 New Fetter Lane
London EC4A 1PU
Tel: 01-353 0013/4/5

Microsystems Unit
National Computing Centre
Oxford Road
Manchester M1 7ED
Tel: 061 228 6331

A federation of 15 independent centres (of which the London centre is only one) set up by the National Computing Centre on behalf of the Department of Trade and Industry. The aim of the centres is to make knowledge of the use, application and potential of micros available to smaller businesses and the public at large. Anyone can, therefore, walk in and make use of the centres' facilities.

The centres offer the following services:

- demonstration of around 15 microcomputer systems
- details of hardware and software suppliers
- technical details of microcomputer systems and software
- advisory and consultancy services (from as little as 1 hour)
- training courses

They have also produced a useful guide.
The Microsystems Software Directory, which contains 2500 entries for software collated from sources all over the UK. The database of entries is updated daily. There are ten issues a year, available by subscription for £180 or £25 an issue.

In order to stimulate the development of training materials, the federation, with funding from the Manpower Services Commission, is also initiating a project which will provide potential users with the opportunity to examine samples of computer based training. The management of the project will be undertaken by the NCC on behalf of the Department of Trade and Industry. In stage one of the project:

- existing materials used by business users in Microsystems Centres will be monitored
- an index of courseware possibly useful to small businesses will be compiled
- the training needs of small business users will be identified
- courseware development will be specified and commissioned

Stage two of the project will be to provide all Centres with examples of existing and commissioned courseware. For further information contact the Microsystems Unit at the NCC.

O*@ National Computing Centre (NCC)

Head Office
Les Cupitt
Oxford Road
Manchester M1 7ED
Tel: 061 228 6333

The NCC is a membership organisation initiated by the government in 1966. It publishes an extensive list of computer/IT related titles and produces a wide range of multi-media training materials covering areas from computer and information technology

awareness to technical skills training and system design. As part of its information technology project it set up 'circles of interest' to provide member companies with information on specific topics ranging from local area networks to word processing. Besides offering an information and consultancy service the NCC also runs formal training courses and produces a variety of training packages for self-teach and in-company training. Among those materials which users might find particularly useful are a series of three modules on computer based training aimed at disseminating effective methods and techniques to enable the potential of computers and related technologies to be fully exploited in the education and training field. The module titles are: Designing CBT Systems, Authoring Systems, and CBT Case Histories. The NCC has also acquired a package of CBT materials designed to run on the IBM personal computer and based on self-prompting disks which simulate actual software. The self-prompting disks instruct the novice on how to start the computer, copy a file, list a directory, format a disk, produce a graph, calculate a budget, create a database, display a message, clear a worksheet and close a system.

There are regional offices in London, Birmingham, Bristol, Glasgow and Belfast. (See also Microsystems Centres.)

0 NERIS

NERIS stands for the National Educational Resources Information Service. This is a new service being developed for schools and educational support agencies to help teachers and others identify and obtain learning resources across the curriculum in all forms of media. It is receiving pump priming funding from the Industry/Education Unit of the Department of Trade and Industry.

NERIS aims to bring together information about teaching and learning materials that are currently scattered around the country. These materials will include such things as resource packs, worksheets, computer programs, video films, and other audio-visual or printed materials. The information will be stored on a computer at the Open University.

Further information may be obtained from:

The Director
National Educational Resources Information Service
Maryland College
Leighton Street
Woburn MK17 9JD

0@ National Interactive Video Centre (NIVC)

Claire Bayard-White
Information Officer
National Interactive Video Centre
27 Marylebone Road
London NW1 5JS
Tel: 01-935 8190

CET has set up an Interactive Video Centre to encourage the use of interactive video in training and education, and to give information and advice to users and producers.

The Centre has financial support from the Department of Trade and Industry, the Manpower Services Commission and two major companies, involved in the manufacture of hardware, Philips and Thorn EMI.

The combination of video and computing has the potential to provide a powerful and flexible learning tool. At this stage of development a variety of approaches needs to be encouraged and there is already a widely dispersed pattern of research and development activity getting underway in the UK.

CET's Interactive Video Centre aims to assist this development by providing a range of support services. It provides an opportunity to see and use interactive video materials and equipment. The Centre maintains a register of research and development activity and provides other information services including case studies, technical briefings, production guidelines, and training activities including specialist seminars and workshops.

It has also published "An introduction to Interactive Video", which outlines current applications and briefly discusses programme development and costs, and "Interactive Video Case Studies and Directory" by Claire Bayard-White, a survey of the current scene in IV.

* National Reference Library of Schoolbooks and Classroom Materials (NRLSCM)

Rosemary Jackson
Librarian
NRLSCM
University of London
Institute of Education
20 Bedford Way
London WC1H 0AL
Tel: 01-636 1500 ext 267

A library "open to all who are interested in school books". The librarian has compiled a bibliography, The Chip: A Selection of Books on Computers, Calculators and Wordprocessors.

*@ The Open University

The Open University has produced a number of learning packages, courses and books on IT in education and training, including:

PH514 An Introduction to Computer-Based Training

This pack has been designed and produced by the Open University's Institute of Educational Technology, with the backing of the Manpower Services Commission. It helps organizations decide about new technologies in training without the need for a sizeable investment in equipment, time or programming.

It contains:

a 75-minute VHS video showing the experience of organizations already using CBT.

A one-hour audio cassette and media booklet explaining the finer points of software design and logistical planning.

An illustrated text covering the latest developments, the choice of a computer, commissioning CBT software and how to evaluate the software tools needed to design an in-house programme.

An action plan for assessing the case for or against using CBT.

It takes around 20 hours to work through the pack. The pack costs £150.00 and is available from the Learning Materials Service, Centre for Continuing Education, The Open University, PO Box 188, Milton Keynes MK7 6DH Tel: 0908 74066.

The Open University received funds from the DES Microelectronics Education Programme to provide teachers in Britain with an in-service training programme. The aim of this project is to enable teachers to make informal decisions about the role of the microcomputer in schools and to provide them with some of the practical skills necessary for them to employ the new technology successfully in the classroom.

Associate Student Central Office
The Open University
Walton Hall
Milton Keynes MK7 6AA
Tel: 0908 74077

Microelectronics in Schools Project
Institute of Educational Technology
The Open University
Walton Hall
Milton Keynes MK7 6AA
Tel: 0908 652088

These packs are intended for individual use and are planned so as to enable the user to build on knowledge and skills gained from previously studied packs.

1. P540 Awareness-Pack (available for the BBC B, RML 480Z, RML 380Z, Apple and Spectrum).
The pack is for the computer novice who may be a teacher of any subject in the 8-16 age range. After studying the pack teachers should be able to set up and run their microcomputer, use educational material on the microcomputer, evaluate the educational potential of the microcomputer and gain a basic understanding of computer jargon.

   The pack consists of a study book, project book, case studies book and software.

2. P541 Educational Software (currently available for the BBC B, RML480Z, RML 380Z and the Apple II).
The pack is intended for primary and secondary teachers who already have some experience of microcomputers; in particular, they might have studied the awareness pack above. After studying the pack the student should have gained some knowledge of the nature of educational software, how it is produced and the teacher's role in producing it. Although students will not be taught programming skills, they should have gained an appreciation of general programming concepts.

   The pack consists of a study book, activities book, reader, software, videocassettes and notes.

3. P542 Microcomputers in Action in the Classroom
This pack is aimed at primary and secondary teachers wishing to put the microcomputer to the best possible use in the classroom. In particular, it aims to show through case studies how teachers have used computers in their classroom. These range from information retrieval to wordprocessing. Having studied these materials students may also observe and analyse their own and other classrooms through the use of video audio and text.

   The package consists of a case studies book, videocassette and notes, activities book, study book and software.

4. P543 Learning about Microelectronics
This pack assumes no previous knowledge or experience and is intended for teachers of any subject in the 8-16 age range.

   This pack aims to communicate the fundamental aspects of microelectronics. By means of practical work on "DESMOND" the small computer that comes with the pack, teachers will learn how to make a computer operate various devices in terms of sensing, processing data, timing and communicating. There will also be several examples of classroom practice so that teachers may choose for themselves how to plan the teaching of microelectronics. The pack consists of the book, Discovering Microelectronics introducing basic electronics, a kit of sensing and display devices, a practical book of experiments, a case study reader and a study book.

5. P544 Inside Microcomputers
This pack also uses "DESMOND" to show the architecture of microprocessors as found in washing machines and cameras as well as home microcomputers.

From 1987 it will be possible to study EH221 Educational Computing as an undergraduate or an associate student of the University.

The course aims to provide students with:

- knowledge of how computers can be applied in education.
- familiarity with a modern microcomputer and an introduction to two of its main programming languages.
- familiarity with educational and technical problems that must be solved before computers can be successfully introduced into educational settings.
- knowledge of the principles underlying the design of educational software packages.
- knowledge of technologies (such as artificial intelligence), political initiatives and logistical constraints (such as teacher training provision) that influence the development of educational computing.
- sufficient understanding and confidence to evaluate and apply or reject new educational software packages.

The Open University conducts other courses concerned with computer awareness, computer studies and information processing. Among these is the course Computing and Computers (M252). This course assumes no previous knowledge and is aimed at professional and managerial staff likely to come into contact with the computer at work and those in the computer industry who wish to broaden their knowledge. For details of Open University courses send for Open Opportunities available from the Associate Student Central Office at the above address.

0 Prestel Education

Telephone House
Temple Avenue
London EC4Y 0HL
Tel: 01-822 1012

Prestel is part of British Telecom and was the world's first viewdata information and communications service.

Prestel currently provides over 300,000 pages of information and interactive services, provided by over 1000 organisations.

A subscription to Prestel Education allows schools and colleges to demonstrate the principles of viewdata, computerised databases, and electronic mail, while at the same time showing practical applications already being used by thousands of people both at work and at home.

At a time when more emphasis is being placed on making the curriculum relevant to the outside world, Prestel can also provide a source of up to date information for use across the curriculum, especially in subjects like Business Studies, Home Economics, Health Education, Mathematics, Life and Social Skills and Literacy.

Specialist educational databases on Prestel Education include the ECCTIS guide to higher and further education courses, the POLYTEL course vacancy service run by PCAS and the Committee of Directors of Polytechnics, the SEND special educational needs database, the SIGNPOST careers guide from COIC, the SCHOOL LINK educational computing electronic magazine and the SCHOOLS' TELESOFTWARE service.

0 Royal Society of Arts Examinations Board (RSA)

Sara Caldicott
6-8 John Adam Street
London WC2N 6EZ
Tel: 01-930 5115

Computer Literacy & Information Technology

Stage I is intended for anyone who wishes to be able to use computers and information technology, and also provides a comprehensive basis for those intending to go onto specialised or more advanced studies. The aim is to assess the candidate's ability to use computers and information technology in common applications such as wordprocessing, spreadsheet, database.

Stage II is to be run as a pilot scheme in the 1986-7 session. It is designed for those who have some Computer Literacy and basic numeracy skills, and who wish to extend their skills in, and their knowledge and understanding of, information technology in work-related and/or personal contexts. The scheme aims to assess the candidate's ability to draw together a variety of Information Technology facilities to: analyse and select appropriate information, input and store data, and receive and transmit communications.

Computers in Data Processing: Stage I (Elementary) & Computers in Data Processing: Stage II (Intermediate)

These schemes are designed for those whose work may be affected by a computer installation, but who are not actually working on such installations. They should be of value both in connection with appreciation courses at schools and as part of wider full and part-time courses in business studies at colleges.

Stage I (elementary) is aimed at students following commercial, secretarial or liberal studies courses. The aim is to acquaint the student with the fundamental concepts of data processing and computers; a wide variety of computing facilities and applications; and the impact of the computer on industry, commerce, public administration, society and individuals.

Stage II (Intermediate) aims to re-inforce the basic concepts of computer-based data processing in order to develop an understanding and critical appreciation of the use of computers, and lay the foundations on which a more detailed course may be based. It is aimed at any student who wishes to obtain a working knowledge of computers as provided for by Stage I but at a greater depth.

Wordprocessing

Stage I is designed for those who are employed or preparing for employment at a junior level, and under supervision, in secretarial and clerical occupations which require a basic competence in wordprocessing techniques.

Stage II tests the candidate's competence to (a) use wordprocessing facilities effectively in carrying out a wide range of tasks and (b) produce within a time constraint work that is free from error and attractive in appearance.

Computer Teaching Qualifications

The RSA currently offers Teachers' Diplomas in Computer Studies and for the Use of Computers in Education.

The Teacher's Diploma in Computer Studies is intended for experienced teachers who have some familiarity with computers. The scheme is designed to test the knowledge and understanding necessary to teach computer appreciation courses below 'A' level standard.

The Teacher's Diploma for the Use of Computers in Education is intended for experienced teachers who have some basic familiarity with computers and who are interested in the use and management of the computer in assisting teaching and learning. The aim is to test the ability of candidates to evaluate and implement the application of the computer to various disciplines, manage computing resources and assess the potential impact of educational computing in curriculum development and teaching methods.

Modular Information Technology Scheme for Teachers and Trainers

This scheme attempts to encompass within its structure the Information Technology needs of all teachers/lecturers/trainers and provide a nationally recognised qualification. It offers both general awareness in IT for the non-computing teacher/ trainer and more advanced work for the specialist.

It has a modular framework in which candidates may choose their own path from the modules offered by their particular centre.

No type of attendance or length of training is stipulated and certification of as many or as few profile sentences as required is available at any time from the RSA, in the form of a Profile Memorandum, Certificate or Diploma.

The aim of the scheme of assessment for the Certificate in Information Technology is to test the ability of candidates to use and apply information technology in education/training and to test the knowledge and understanding necessary to teach an IT course at an awareness level.

The aim of the scheme of assessment for the Diploma in Information Technology is to test the knowledge and understanding of candidates to either teach a specialist technology subject at an examination level or to use information technology as a tool in administration and management.

0* The Scottish Council for Educational Technology (SCET)

SCET is responsible for the promotion and development of educational technology in its widest sense throughout education and in industrial and commercial training. SCET is involved in a wide variety of activities and projects involving the use of microelectronics in education and training including the following:

Support Software Library

SCET develops and maintains a library with a large number of educational packages for the principal microcomputers in use in Scottish education. The packages are targetted at ages from Early Primary to Further Education. Subjects covered include Social Subjects, Mathematics, English, Environmental Studies and Home Economics and some programs not specific to any subject. The Microspecial Pack has been produced to help teachers explore the potential of the microcomputer for pupils with learning difficulties. The software is available throughout Scottish education with copyright restrictions and is sold in other countries by agreement (see SCETLANDER Ltd below).

Research and Development

SCET promotes a programme of research and development in the use of microelectronics in education through its Microelectronics in Education Committee (MEC).

Information

SCET provides an information service on the use of computers in education and carries a series of occasional papers on topics of interest to teachers. Catalogues of educational software are also held and SCET publishes "Micros in

Scottish Education", a periodical reporting on educational computing in Scotland.

SCET is developing the educational potential of electronic communication systems and activities/projects involving Prestel, CET's private viewdata system and the Times Network Systems (TTNS) are presently undertaken. Information on programs in the Supported Software Library is available both on TTNS and on Prestel.

SEND (Special Educational Needs Database) consists of more than 3000 pages of information about microelectronics and special educational needs. SEND is managed and maintained by SCET.

The MARIS (Materials and Resources Information Service) Project is funded by the Open Tech and is based at Ely, Cambridgeshire and at SCET in Glasgow. The Project now provides MARIS-NET, a new on-line information service for training and education with a database holding details of over 6000 open learning packages available in the UK.

SCAMP

The Schools Computer Administration and Management Project (SCAMP) is based at SCET and is the most advanced project of its kind in Europe. SCAMP offers an integrated modular system, capable of meeting the changing administrative needs of individual secondary schools of all sizes. The system is designed to meet the increasing demand for accurate, up-to-date and readily accessible information for management in schools and agencies such as local authorities, examination boards and national bodies.

SCEMP

The Scottish Community Education Microelectronics Project (SCEMP) is based at SCET, funded jointly by SCET and the Scottish Community Education Council. It provides a national focus for the use of new technology as a community resource. SCEMP has identified the following priority areas: the need for a national program library; the need to provide information, advice and consultancy; and the need for future development of communication and information systems. Since 1984, the project's activities have been concentrated on software and development, equipment loan, training and consultancy, and information and advice services.

SCETLANDER Ltd

The company was set up in early 1986 and is jointly owned by SCET and Scotlander plc. SCETLANDER Ltd has been set up

primarily to market educational services (including software) throughout the world, and software from SCET's Supported Software Library.

Information Technology Videotapes

The Scottish Central Film Library (part of SCET) has acquired the rights to distribute a series of video programmes on different aspects of information technology. The programmes are designed to introduce the layman to the use of computers, microelectronics and telecommunications and they have been found useful for a variety of purposes in education, industry and commerce.

Contact:
Dennis W Daly
Assistant Director
SCET
Dowanhill
74 Victoria Crescent Road
Glasgow G12 9JN
Tel: 041 334 9314

Books

Information Technology - General

Hawkridge, David
New Information Technology in Education
Croom Helm 1983 - £11.95

This book offers a survey of recent developments in information technology (IT) and aims to demonstrate how it can be used to improve the quality of education. Included are sections on IT in primary and secondary schools, teacher training, vocational and continuing education. Social, economic, and technical problems are also considered.

Maddison, John
Education in the Microelectronics Era: a comprehensive approach
Milton Keynes: Open University Press, 1983 - £5.95

The author of this book offers a good overview of the microelectronics/IT revolution. Examined are the relationships between information technology and the process of learning and teaching across the curriculum and at all levels. Included are case studies and useful notes.

Meadows A J et al
Dictionary of Computing and Information Technology
Kogan Page 1985 - £12.95

This dictionary is aimed not only at the non-specialist and those with an interest in the area of information technology, but also at the various specialist groups whose concerns overlap in the field of new information technology. The dictionary contains over 2500 entries and intends to cover all the major areas of information technology.

National Electronics Council
Human Factors and Information Technology
National Computing Centre, 1983 - £5.95

This book is the result of work done by the National Electronics Council which aimed to study the implications, social and otherwise, of the interaction between human activity and information technology. The book provides information on the introduction of IT into an organisation which has established practices, the pros and cons of IT, several case studies, a list of contacts, publications and training materials.

Somerville, Ian
Information Unlimited: the applications and implications of Information Technology.
Addison-Wesley, 1983 - £7.50

Intended as an introduction this book covers a wide area of topics relating to information technology; the development of computers, telecommunications technology, television, interactive video, database systems, computers in the home and at work. There is a brief glossary and readiong list.

Tucker, Janey (Editor)
Education, Training and the New Technologies: A Report of the Scottish Council for Educational Technology Conference, 'Look out for Learners', held 16-17 March 1983.
Kogan Page, 1984 - £7.95

This book is concerned with the impact of the new technologies on education and training. Part 1 considers what skills and qualities will be required by those who start work in the near future. Part 2 discusses how teachers, trainers and pupils may learn to exploit the new situation. Part 3 is a series of reports on issues such as interactive video. Part 4 is a report on the Training Technologies Exhibition and Part 5 contains appendices, glossary and index.

Zorkoczy, Peter
Information Technology: an introduction (2nd edition)
Pitman, 1984 - £4.95

An informative and well-organised introduction to a wide range of systems. Section 1 explains the main areas of application and Section 2 gives the technical background, well explained and supported by line diagrams. Chapter headings include telecommunication, optical systems, video, computers and computer vision, data protection, expert systems, microforms, voice communication, data networks, electronic mail and videotex.

Computers -General

Megarry, Jacquetta
Computer World (A Piccola Factbook)
London: Piper Books Ltd, 1983 - £2.95

Sturridge, Helena
Microcomputers (Science in Action)
Other titles in the series: Sound Systems, Television and Video
Robots
London: Kingfisher, 1983 - £3.95

Tatchell, Judy and Bennett, Bill - Edited by Lisa Watta
Usborne Guide to Understanding the Micro
London: Usborne Publishing Ltd, 1982 - £2.25

These fun books offer a good, easy introduction to computers and various aspects of IT for the uninitiated. Not to be scoffed at.

Computers in Education and Training

Beech, Graham
Computer Based Learning: practical methods for microcomputers
Sigma Technical Press, 1984 - £8.50

Intended as a practical book for all those wishing to educate, learn or train with the help of the microcomputer. This book includes an overview of computer based learning, methods for designed lessons, and the selection of complete systems. There is also a review of successful existing applications in both education and training and a major section on the authoring language PILOT.

Chandler, Daniel and Marcus, Stephen
Computers and literacy
Open University, 1985 - £6.95

This discusses the problems of the introduction of computers into education, and literacy teaching. There are chapters on electronic text and evaluation. The fundamental issues are discussed, as well as classroom examples. The book includes a guide to software, a glossary and a bibliography.

Dean, Christopher and Whitlock, Quentin
A Handbook of Computer Based Training
Kogan Page, 1983 - £14.95

For managers, practitioners and academics involved in vocational and educational training, this book aims to be a comprehensive introduction to computer based training (CBT). Among the topics covered are terminology, programming procedures, hardware/ software, courseware development, testing and evaluation. Included is a brief glossary.

Further Education Unit (FEU)
Computer Literacy: Part I - A Manager's Guide
Part II - A Teacher's Guide to Computer Literacy

Part I is intended primarily for providers of computer literacy, i.e. those involved in the management function. This part contains an overview of Computer Literacy in the context of education and training and gives content, resource and staff development recommendations together with strategies for assessment.

Part II is intended mainly for the classroom teacher or working trainer and gives detailed teaching materials including teaching plans, resources (including software) assessment and projects. It is structured in a modular form.

Information Technology in FE: a survey of IT policy and of current practices in a sample of colleges.

This is a short survey of IT in about 20 Colleges of Further Education, the use of IT in the colleges and courses they provide for students, and for industry.

FEU publications are produced as a result of research projects and are concise, and very practical.

Gerver, Elizabeth
Computers and Adult Learning
Open University, 1984 - £5.95

This is an introduction to the role of computers in the area of part-time adult education, industry, community education and for teaching adults about computers.

Heaford, John M
Myth of the Learning Machine
Sigma Technical Press, 1984 - £9.00

A two part discussion of CBT, the first concerned to analyse relevant research and experience and the second to give practical advice on creating computer based training resources.

Knight, K R and Hall R
The Computer Board Training Programme: final report to the Manpower Services Commission
Mills and Allen, 1982

This report aims to encourage the use of computers in commercial and industrial training. The report maintains that CBT has been successful and motivating, cost saving, and particularly well suited to individualised/distance learning.

Local Government Training Board
Working with Computers: A User's Introductory Guide
1984 - (price from £5.00 - £10.00, according to institution)

Intended as an introduction for those in local government whose work at present or in the future will bring them in contact with computers and/or wordprocessors.

Local Government Training Board
Information Technology for Managers in Local Government
(£10.00 - £20.00 according to institute)

This booklet intends to explain the scope of information technology and covers such areas as equipment, jargon and concepts. It also aims to enable managers to assess the likely impact of information technology on their responsibilities and systems.

Manpower Services Commission (MSC)
Computer-Based-Training: A Guide for Trainers and Managers
MSC, 1983

Aimed at trainers who wish to explore the potential of computer based training (CBT) this handbook provides an overview of the application of CBT in the training world. Sections include a guide to good practice, resources for CBT, course production and implementation, costing and evaluation. Included are a brief bibliography and glossary.

Megarry, Jacquetta et al (editors)
World Yearbook of Education 1982/83: computers and education
Kogan Page, 1983 - £15.95

This book is concerned with the need for information processing skills and computer literacy. The first part of the book introduces general issues, including the evaluation of computer assisted learning. Topics in Part 2 include computer managed learning, the handling of information by computers and the computer as a medium for distance education. Five international studies form Part 3 and Part 4 examines the use of the computer across the curriculum. There is a classified and annotated bibliography, glossary and index.

Olbrist, A J
The Microcomputer and the Primary School
Hodder and Stoughton, 1983 - £3.95

Designed for the teacher with little or no experience of the micro in the classroom. This book begins by outlining the physical components of the computer and gives practical advice on its use. The author then outlines the areas of use of the microcomputer and covers such topics as simulations, information retrieval and database. Programming languages LOGO, Prolog and Basic are also discussed. Included in the appendices are a glossary and list of useful organisations and a brief bibliography.

Self, John
Microcomputers in education: a critical appraisal of educational software
Harvester, 1985 - £6.95

This is a realistic informed look at CAL. It is highly critical or poor programs which impede development.

Smith, P R
Advances in computer-assisted learning: Selected proceedings from the CAL '85 Symposium at Nottingham University, April 1985,
Pergamon, 1986 - £25.00

This is a selection of papers on CAL and CBT which affords an overview of the current state of the art. Areas covered include curriculum development, database applications, CAL for handicapped students and CAL in engineering.

Stonier, Tom and Conlin, Cathy
The three Cs: children, computers and communication
John Wiley, 1985 - £7.50

Written by Tom Stonier, formerly of the University of Bradford, and Cathy Conlin, a primary school headmistress, this discusses the introduction and influence of computers on education at all levels. It contains a chapter on 'the dynamics of class computing', and chapters specifically for parents, academics and teachers.

Vincent, Brieda and Vincent, Tom
Information Technology and Further Education
Kogan Page, 1985

This is a thorough, up-to-date survey of information technology in further education. There is some information on special education, but most of the work is on mainstream further education. It contains useful case studies, and information on examinations, institutions concerned with IT and FE, and extensive bibliographies and references.

Computers in Business and the Office

Megarry, Jacquetta
Computers Mean Business: A Practical Introduction to Computers
Kogan Page, 1984 - £12.95

This is a basic introductory text for people interested in using computers in business. Part 1 explains how and why computer hardware works, and is illustrated by case studies. Part 2 describes important practical applications. Part 3 focuses on user needs, how to choose hardware and software. Part 4 discusses the introduction of the computer into a business and computer based training for staff as well as future developments.

Peltu, Malcolm
The Electronic Office
BBC Publication/Ariel Books, 1984 - £2.95

A concise, readable survey published to coincide with the television broadcasts of the same title. Included is a summary of main electronic office systems, an examination of how the technology works, and a discussion about how systems should be planned, designed, selected and operated. There is also a good glossary and index.

Computers - Reference
Badgemore Park Enterprises
Directory of Computer Training 1985
Maidenhead, Badgemore Park Enterprises, distributed by John Wiley

The standard reference for education and training in the whole field of information technology. This comprehensive directory contains more than 3000 commercial computer training courses currently available in the UK. There are also sections on self study courses, MSC training programmes/grant provisions, training and career development in computing services, consultants, conferences and exhibitions, professional bodies and trade associations, qualifications and a contacts listing of training organisations in the directory.

Communications
Stansell, John
Discovering Communications
Longman, 1982 - £6.95

A lucid and attractive introduction to modern communications, which emphasises the underlying principles and also considers their impact on society. Hundreds of illustrations - mainly in colour - help readers to visualise and understand new developments in telephone systems, radio transmission, video technology, satellites, fibre optics, hi-fi, radar, sonar and more besides.

Databases
Daines, Derrick
Databases in the Classroom
Castle House Publications, 1984 - £6.95

This book provides a thorough grounding in the creation and use of a database, one of the major uses of computers in schools. The author maintains that both project and subject work can be enhanced by the pupils' handling, storage and retrieval of information on the computer. The management of data is discussed, with the necessary skills to manipulate the computer most effectively. Other sections cover how the computer works, and the uses of tape and disk as storage medium. Listings to create a database are included.

Interactive Video
Parsloe, Eric (editor)
Interactive Video
Sigma Technical Press, distributed by John Wiley, 1983 - £10.95

Intended for interested first-time users, amateurs and professionals, this book is a good introduction to interactive video. Sections include: applications - the way in which interactive video technology is already being applied in both education and training; video technology, computer technology, key concepts and equipment.

National Interactive Video Centre
An Introduction to Interactive Video
NIVC/CET, 1985 - £4.00

This is a brief introduction to Interactive Video, with the emphasis on possible applications. It includes information on authoring languages and a list of some available discs.

Bayard-White, Claire
Interactive video case studies and directory
NIVC/CET, 1985 - £25.00

This contains in-depth case studies of the use of interactive video for training in 5 British institutions, including British Airways and British Telecom, giving details of problems encountered and costs. The book concludes with a directory of discs available, and of projects working on interactive video. It is a useful introduction to interactive video.

Videotex
Thompson, Vincent et al
Videotex in Education: A New Technology Briefing
CET, 1982 - £3.00

This is a guide to the terminology of the new teletext and viewdata technologies, examining their possibilities for use at any level of education.

CET Information Sheet No 10: Videotex
CET, 1985 - Free

A short introduction to videotex, explaining the terminology and including sections on the various systems, costs and educational and training uses, with a useful bibliography for further reading.

Wordprocessing
Gibson, Dudley
Word-Processing and the Electronic Office: (Microelectronics Education Programme Readers 2)
CET, 1983 - £10.00

This reader presents a selected set of papers on the technological, social, economic and educational implications of information technology in the office. The reader is primarily aimed at teachers in schools and further education, and in particular teachers of business studies and office arts. Sections cover, among other things, word-processing systems in education, a guide to the applications and selection of suitable equipment. Case studies of wordprocessing in various environments are also included.

Expert Systems, Fifth Generation Computers

Ennals, R and Cotterell, A
Fifth generation computers: their implications for further education
Further Education Unit, 1985

This is an excellent short state of the art review on expert systems and further education, it contains few examples, but is rather a review of the intellectual concepts by two leaders in the field.

Goodall, Alex
The Guide to Expert Systems
Learned Information, 1985

This guide approaches expert systems from a practical point of view. It describes the type of work expert systems can do, and the resources needed to build them in terms of software, hardware and people.

Health and Safety

Visual Display Units
Health and Safety Executive
HMSO, 1983 - £5.00

This contains guidance and recommendations about the introduction of visual display units as they relate to the health and well being of their users. The first part is concerned with possible health effects of VDUs and the second aims to provide general guidance on human factors in the introduction and operation of VDUs.

Pearce, Brian G (editor)
Health hazards of VDTs
John Wiley, 1984

This is a collection of papers and discussions originating from 3 meetings held at Loughborough by the HUSAT (Human Sciences and Advanced Technology) group. No positive conclusions were reached but the area was covered in some detail and the debate throws some light on a controversial topic.

Journals

Training journals which occasionally have useful general articles and reviews of books on information technology and related subjects are:

Training Officer (12 issues a year;
Marylebone Press Limited (£25.00)
25 Cross Street
Manchester M2 1WL

Training and Development: (£2.00 per issue)
Journal of the Institute of Training
and Development
Training Publications Limited
100 Great Portland Street
London W1N 5PD

Journals which consistently offer up-to-date coverage on current initiatives involving information technology in education and more especially, training, and which cover such things as who's doing what at the various training boards, courses and book reviews are:

CBI Education and Training Bulletin (£13.00 members,
Confederation of British Industry (£16.00 non-members)
Centre Point
103 New Oxford Street
London WC1A 1DU

EDUCA - The Digest for Vocational (10 issues a year;
Education and Training Research (£13.50
Subscriptions Department (Single issue £1.50)
Guildford Educational Services Ltd
276 High Street
Guildford
Surrey GU1 3JL

Focus on Adult Training (bi-monthly)
Distribution Manager
MSC (Dept FATN)
FREEPOST
Room E825
Moorfoot
Sheffield S14 4BR

Training through Technology (£75.00)
Reliant House
Oakmere Mews
Potters Bar
Herts

Journals covering computers and related technology are being published at a very fast rate. Three which include news on recent developments, various feature articles on computers and IT, and reviews of hardware/software books are:

Practical Computing
Business Press International Limited
Oakfield House
Perrymount Road
Haywards Heath
West Sussex RH16 3DH

(12 issues a year;
(£16.50
(Single issue £1.25)

Personal Computer World
Computing Publications Limited
32-34 Broadwide Street
London W1A 2HG

(12 issues a year;
(£11.00
(Single issue £1.10)

Which Computer
EMAP
Magazine Services Dept
30-32 Farringdon Lane
London EC1R 3AU

(12 issues a year;
(£18.00
(Single issue £1.50)

There is one very useful journal intended for the education sector which might also be of interest to the trainer in that many of its articles provide a good introduction to various aspects of computers and information technology in general.

Educational Computing
Priory Court
30-32 Farringdon Lane
London EC1R 3AU

(£15.00 for
(11 issues;
(Single issue £1.40)

Other journals aimed at educational sections include:

Computer Education
Mrs S Lea
Computer Education Group Treasurer
North Staffordshire Polytechnic
Computer Centre
Blackheath Lane
Stafford ST18 0AD

(£7.00 yearly -
(subscription to
(Computer Education
(Group)

Computers in Schools
PO Box 43
Hull
HU1 2HD

(£13.50 yearly
(S/Order or
(£15.00 otherwise)

MICRO-SCOPE
Micros & Primary Education (MAPE)
Mrs G Jones
76 Sudbrooke Holme Drive
Sudbrooke
Lincs LN2 2SF

(3 times a year;
(Membership of MAPE
(£10.00 a year)

Journal of Computer Assisted Learning
Blackwell Scientific Publications
Osney Mead
Oxford OX2 0EL

(3 issues a year;
(£8.50)

Primary Teaching and Micros
Subscriptions Dept
Scholastic Publications
FREEPOST
Westfield Road
Southam
Leamington Spa
Warwickshire CV33 0JH

(Bi-monthly
(£7.50 a year;
(Single issue £1.35)

PLET
(Programmed Learning and Educational Technology)
Association for Educational and Training Technology
BLAT Centre
BMA House
Tavistock Square
London WC1H 9JP

(4 issues a year;
(£22.00
(Single issue £7.50)

Abstracts, digests

Educational Technology Abstracts
Carfax Publishing Company
PO Box 25
Abingdon
Oxfordshire OX14 3UE

(Quarterly)

Training Digest
John Chittock
37 Gower Street
London WC1E 6HH

(12 issues a year;
(£62.00)

This information sheet was originally prepared by Claire Bayard-White and has been revised and updated by Judith Morris, and wordprocessed by Nicola Taylor.